

Fig. 1

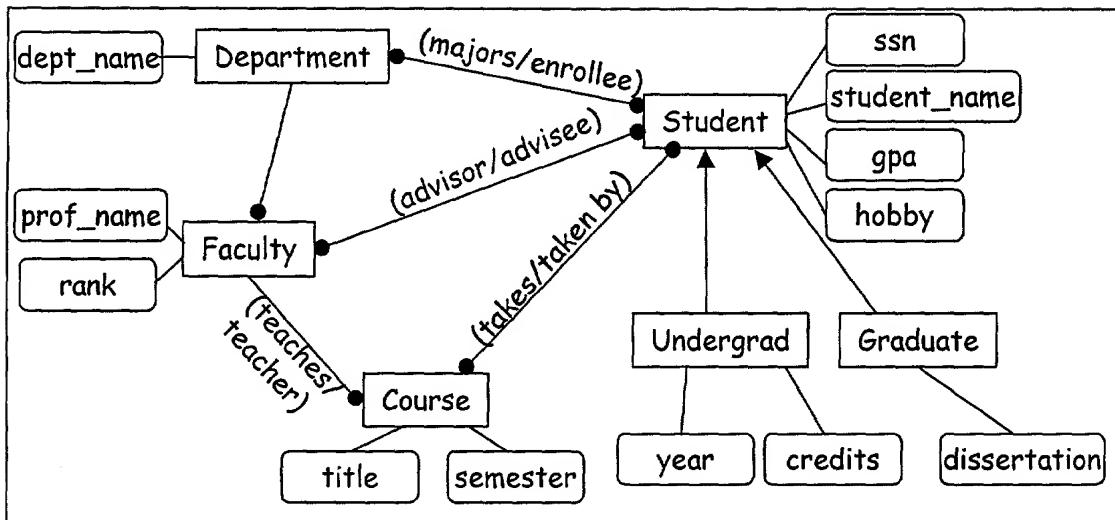


Fig. 2

Advisor to Generic Mappings

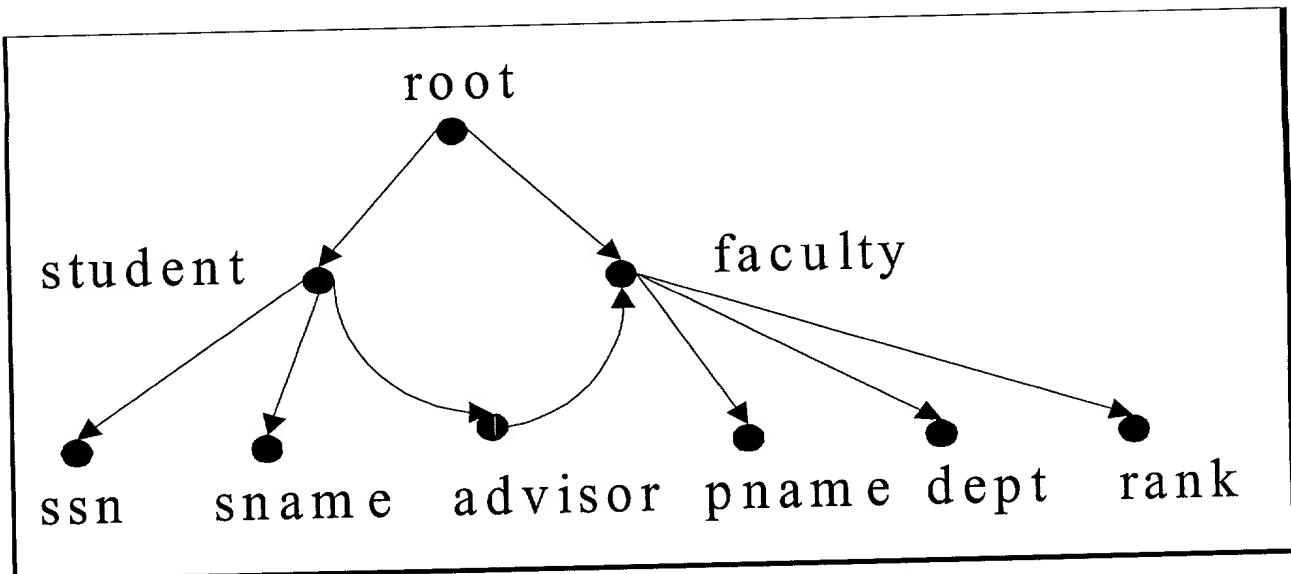
1. $\Phi(\Pi_{\text{dissertation_advisor}}(\text{Advisor})) \Rightarrow \Pi_{\text{advisor}}.\text{prof_name}(\sigma_{\text{dissertation} \neq \text{NULL}}(\text{Generic}))$
2. $\Phi(\Pi_{\text{CS_student}}(\text{Advisor})) \Rightarrow \Pi_{\text{student_name}}(\sigma_{\text{major.dept_name} = 'CS'}(\text{Generic}))$
3. $\Phi(\Pi_{\text{good_student}}(\text{Advisor})) \Rightarrow \Pi_{\text{student_name}}(\sigma_{\text{gpa} \geq 3.5}(\text{Generic}))$
4. $\Phi(\Pi_{\text{poor_student}}(\text{Advisor})) \Rightarrow \Pi_{\text{student_name}}(\sigma_{\text{gpa} < 2.5}(\text{Generic}))$
5. $\Phi(\Pi_{\text{prof_rank}}(\text{Advisor})) \Rightarrow \Pi_{\text{rank}}(\sigma_{\text{dept_name} = 'CS'}(\text{Generic}))$

Scheduler to Generic Mappings

6. $\Phi(\Pi_{\text{CS_student}}(\text{Scheduler})) \Rightarrow \Pi_{\text{student_name}}(\sigma_{\text{teacher.dept_name} = 'CS'}(\text{Generic}))$
7. $\Phi(\Pi_{\text{good_student}}(\text{Scheduler})) \Rightarrow \Pi_{\text{student_name}}(\sigma_{\text{gpa} \geq 3.3}(\text{Generic}))$
8. $\Phi(\Pi_{\text{poor_student}}(\text{Scheduler})) \Rightarrow \Pi_{\text{student_name}}(\sigma_{\text{gpa} < 2.0}(\text{Generic}))$
9. $\Phi(\Pi_{\text{lucky_student}}(\text{Scheduler})) \Rightarrow \Pi_{\text{student_name}}(\sigma_{\text{teacher.rank} = 'Full'}(\text{Generic}))$

Figure 3. Inter-Domain Mappings

Fig. 3

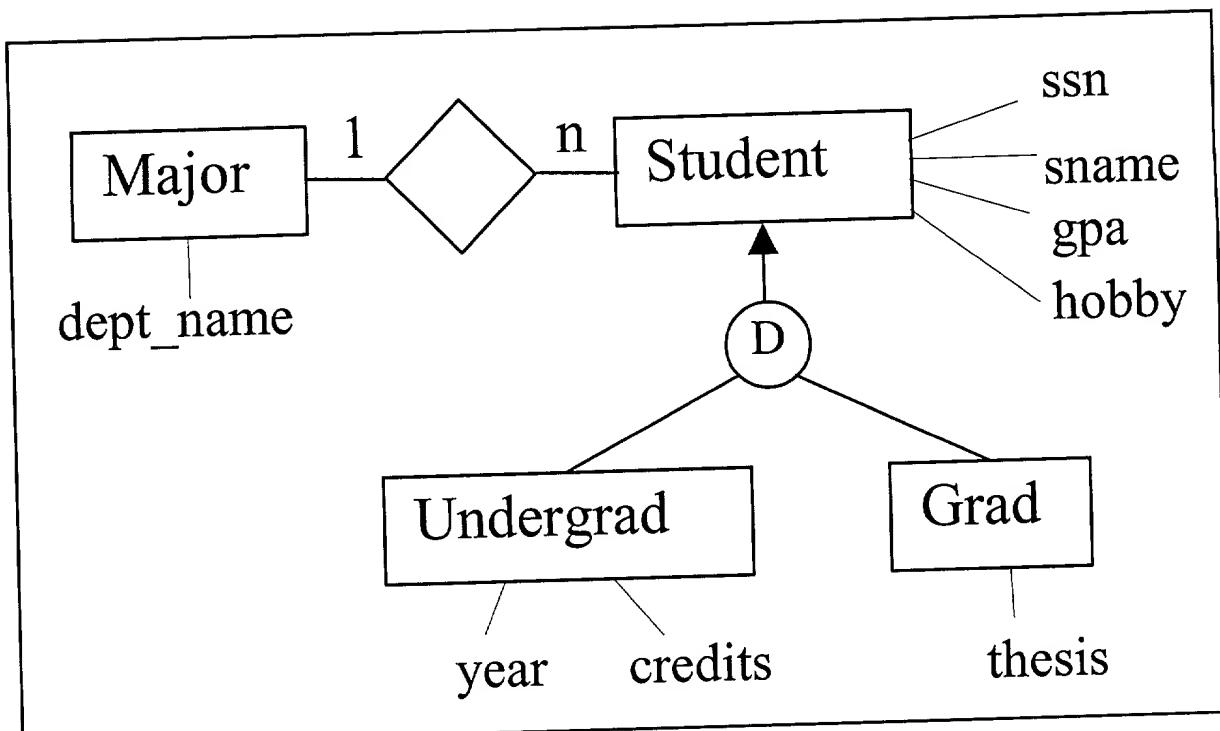


$\Phi(\Pi_{sname}(\text{XML})) \Rightarrow \Pi_{student_name}(\text{Generic})$

$\Phi(\Pi_{dept}(\text{XML})) \Rightarrow \Pi_{dept_name}(\text{Generic})$

$\Phi(\Pi_{pname}(\text{XML})) \Rightarrow \Pi_{advisor.prof_name}(\text{Generic})$

Fig. 4



$\Phi(\Pi_{sname}(\text{Grades})) \Rightarrow \Pi_{student_name}(\text{Generic})$
 $\Phi(\Pi_{dept}(\text{Grades})) \Rightarrow \Pi_{dept_name}(\sigma_{major.dept_name='CS'}(\text{Generic}))$

Fig. 5

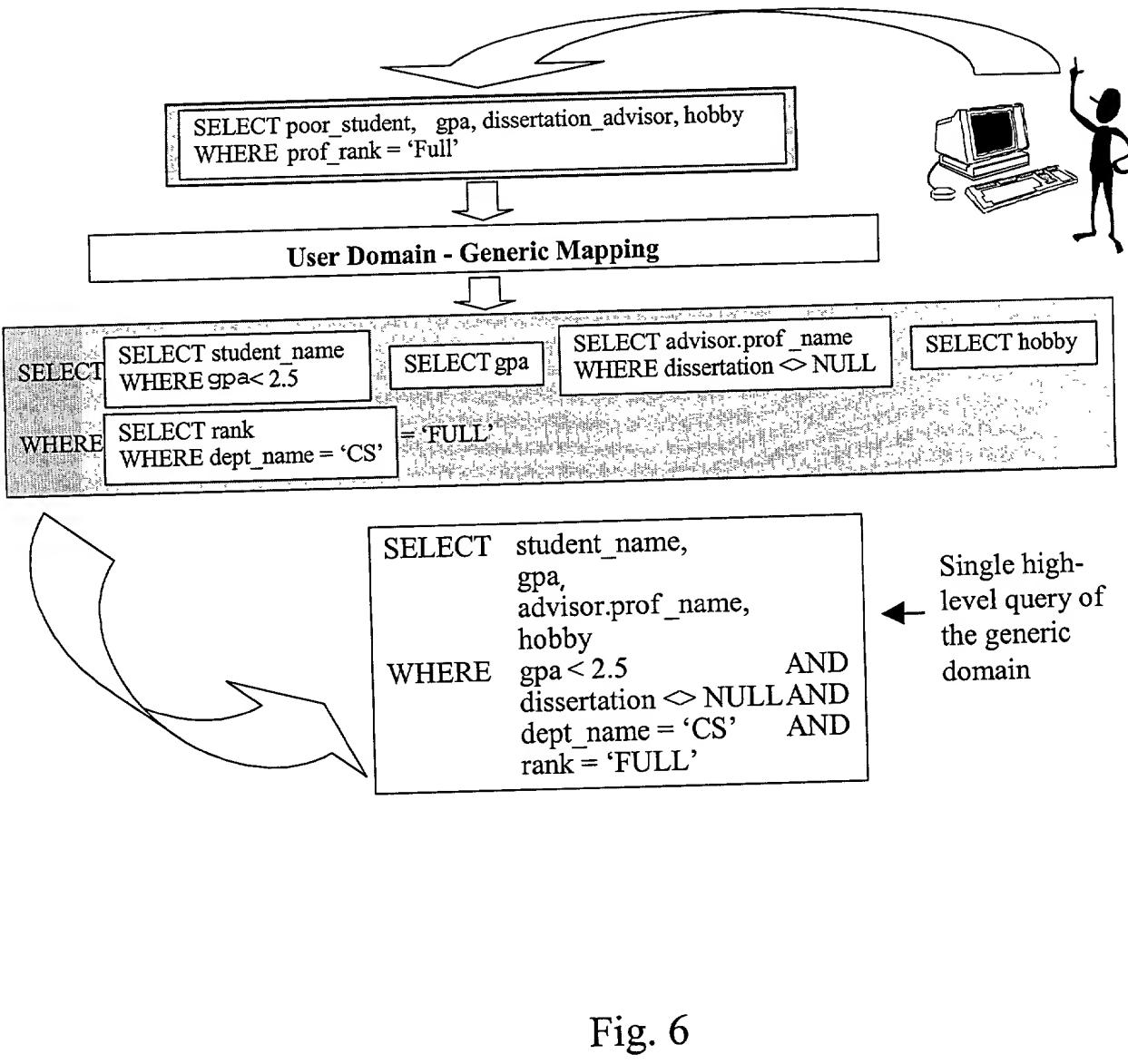


Fig. 6

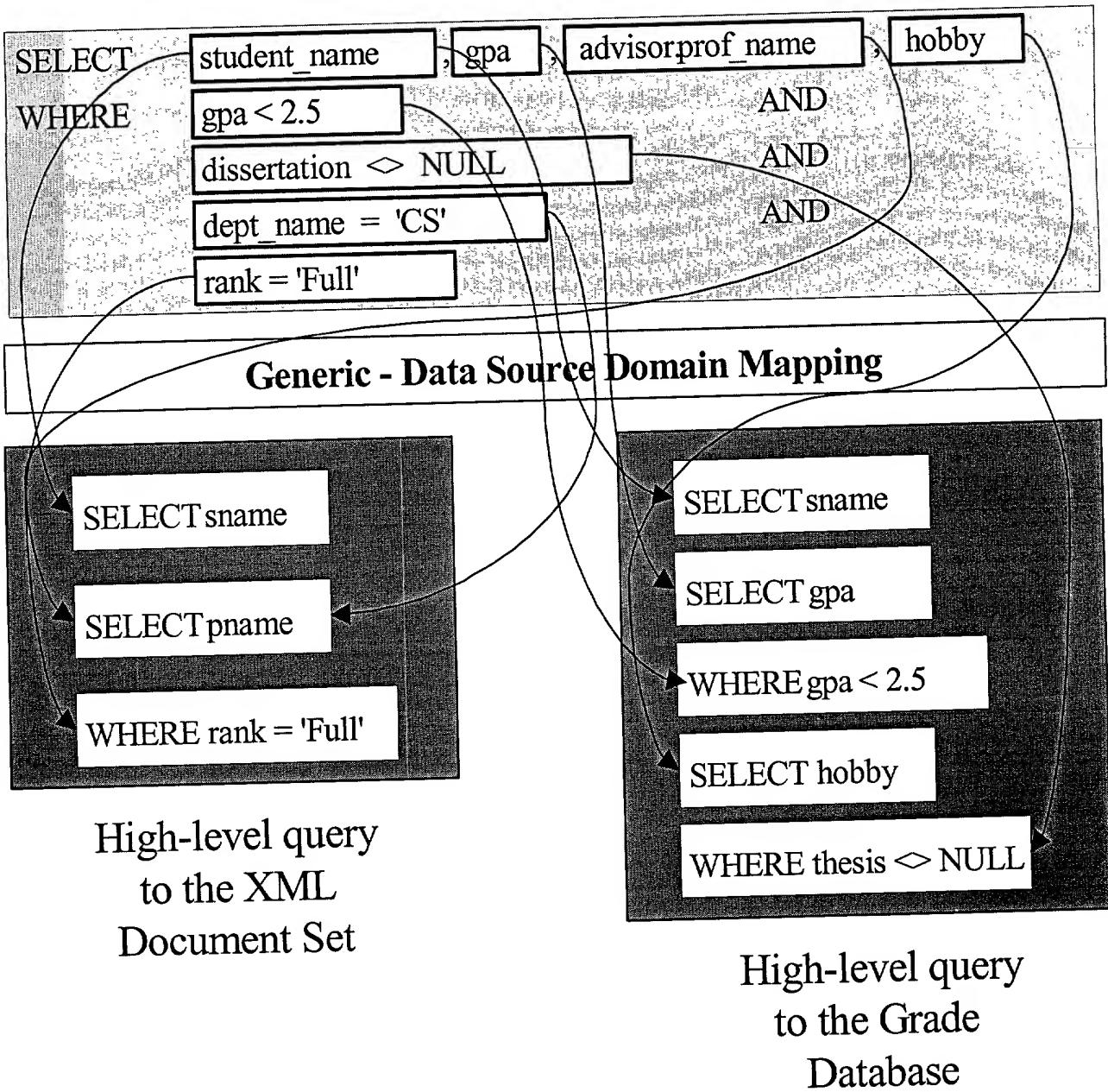


Fig. 7

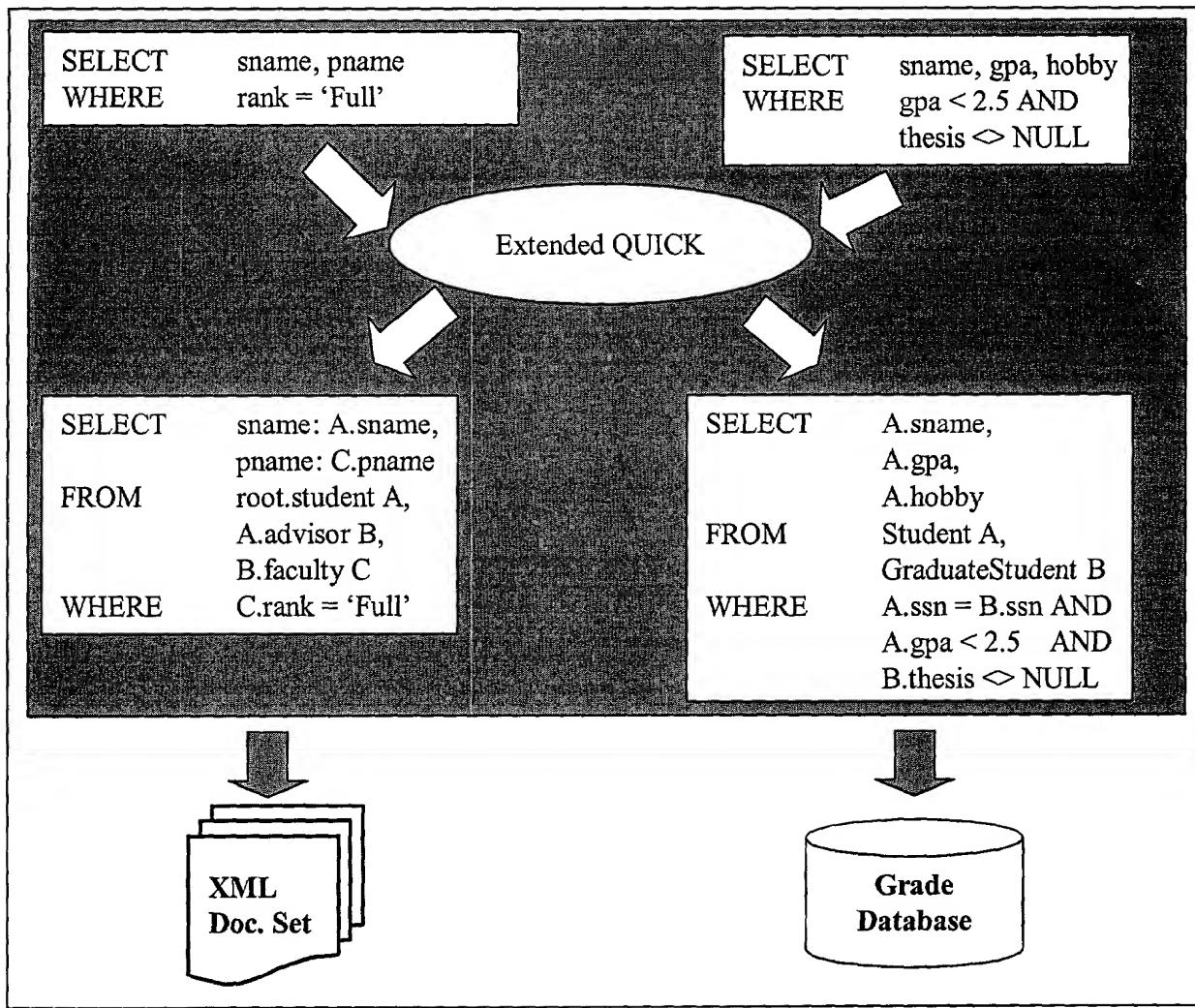


Fig. 8

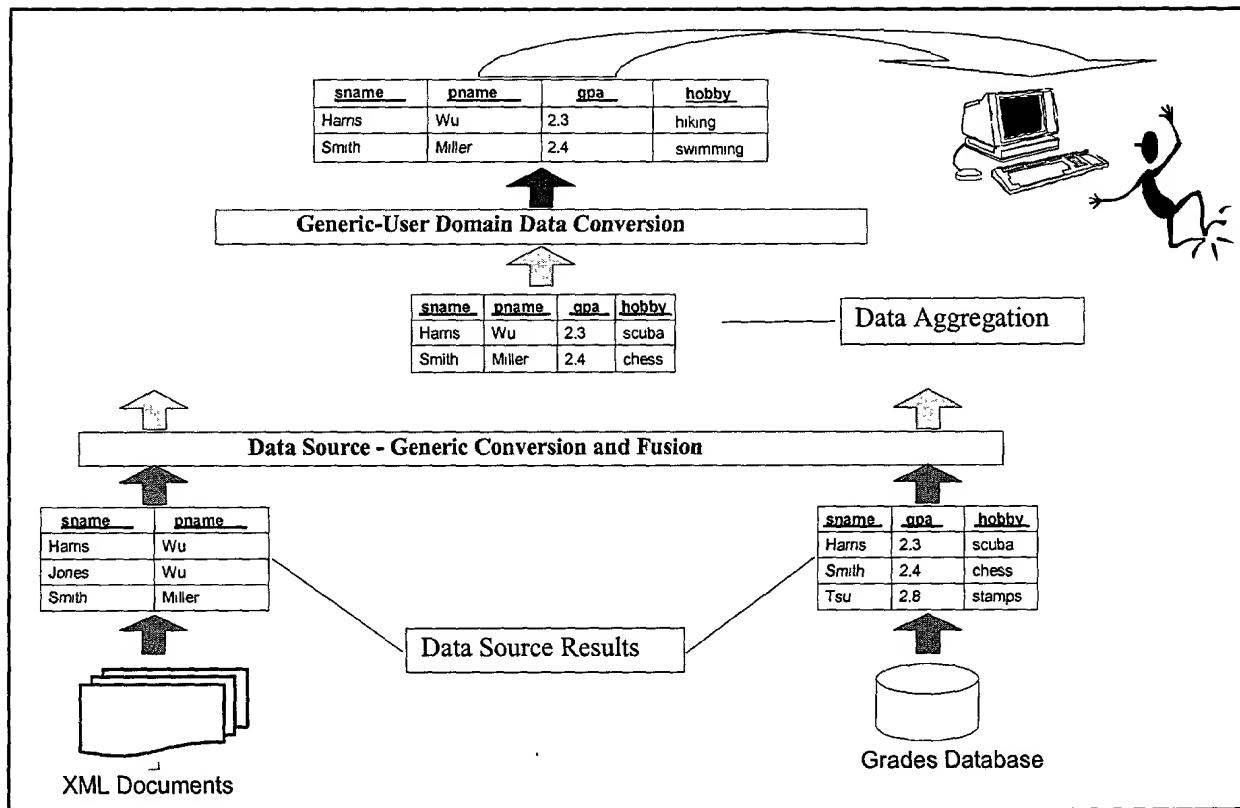


Fig. 9

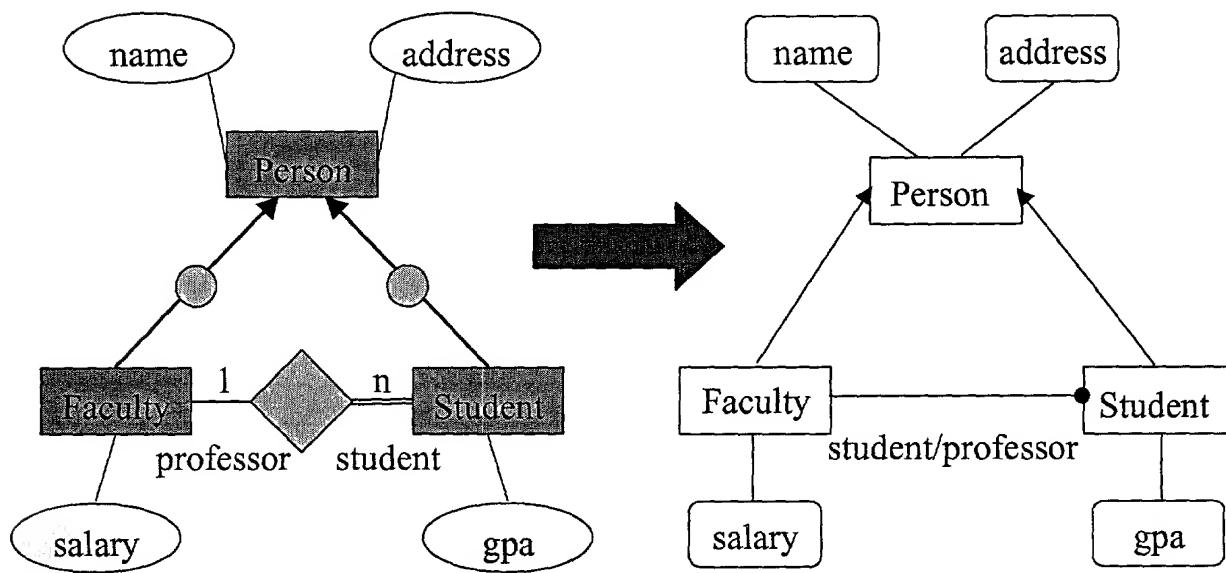


Fig. 10

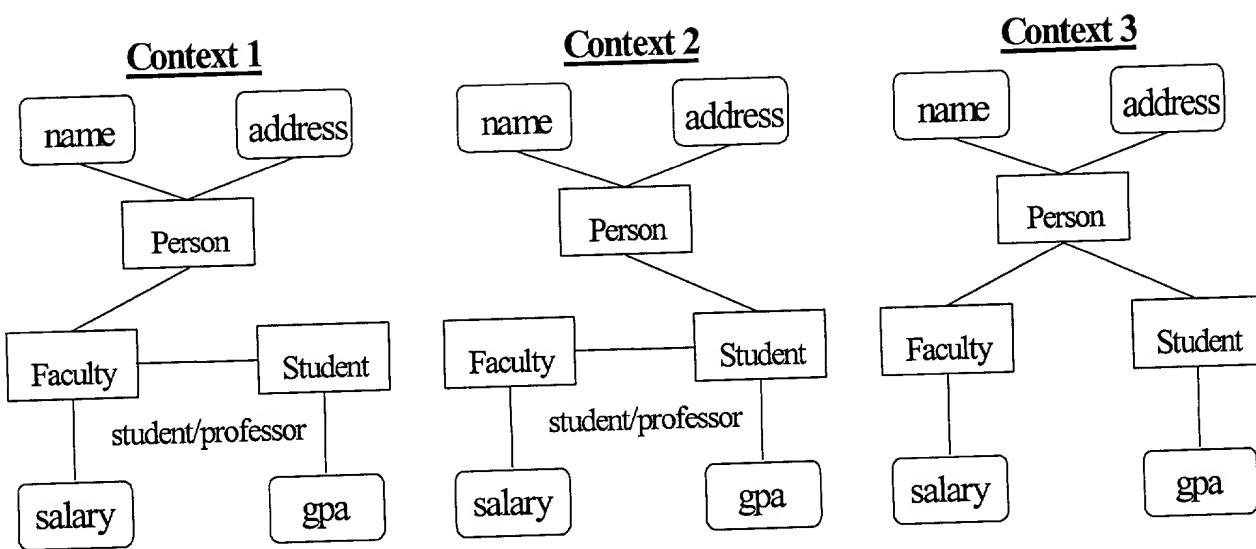
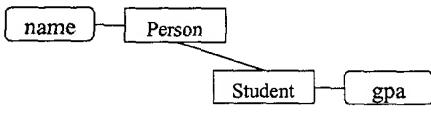


Fig. 11

Context for student role (from context 1)

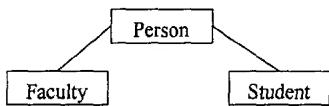


```

SELECT      P1.name
FROM        person AS P1
NATURAL JOIN student AS S1
ON P1.name = S1.student_name_fk
WHERE       S1.gpa >= 3.5

```

Context for professor role (from context 3)

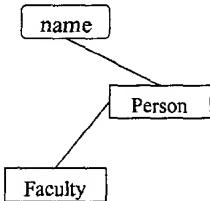


```

FROM        faculty AS F1
NATURAL JOIN person AS P2
ON P2.name = F1.faculty_name_fk
NATURAL JOIN student AS S2
ON P2.name = S2.student_name_fk

```

Context for professor's professor role (from context 2)



```

SELECT      P3.name
FROM        faculty AS F2
NATURAL JOIN person AS P3
ON P3.name = F2.faculty_name_fk

```

Bridge between student and professor roles

```

FROM      student AS S1           // from student role
RIGHT OUTER JOIN faculty AS F1  // from professor role
ON S1.student_professor_name_fk = // bridge
F1.faculty_name_fk

```

Bridge between professor and professor's professor roles

```

FROM      student AS S2           // from professor role
RIGHT OUTER JOIN faculty AS F2  // from professor's professor role
ON S2.student_professor_name_fk = // bridge
F2.faculty_name_fk

```

Figure 12. Contexts and Query Fragments

Fig. 12

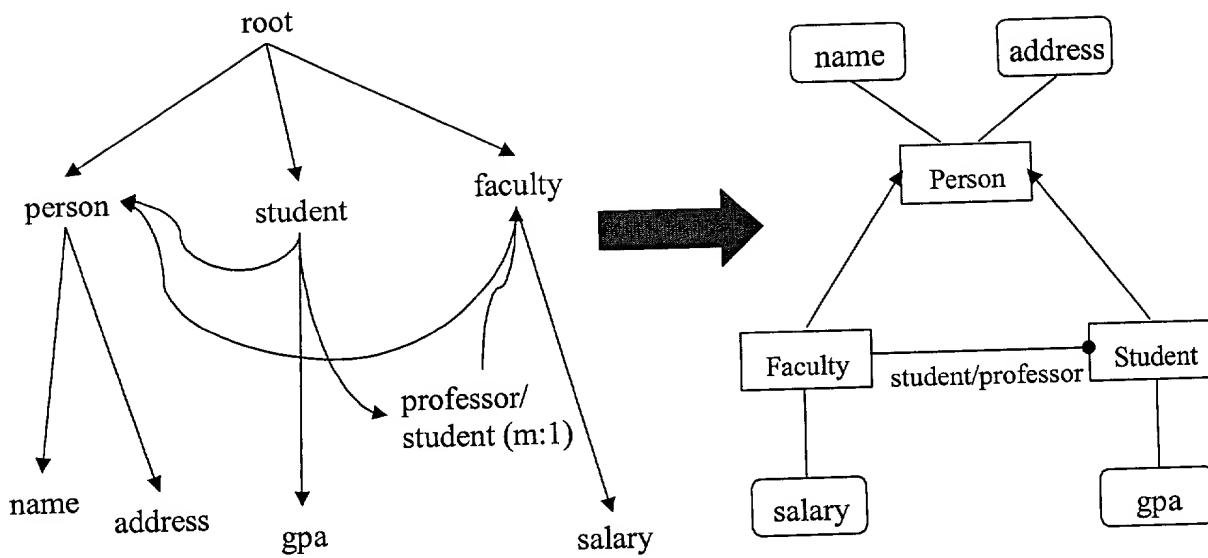


Fig. 13

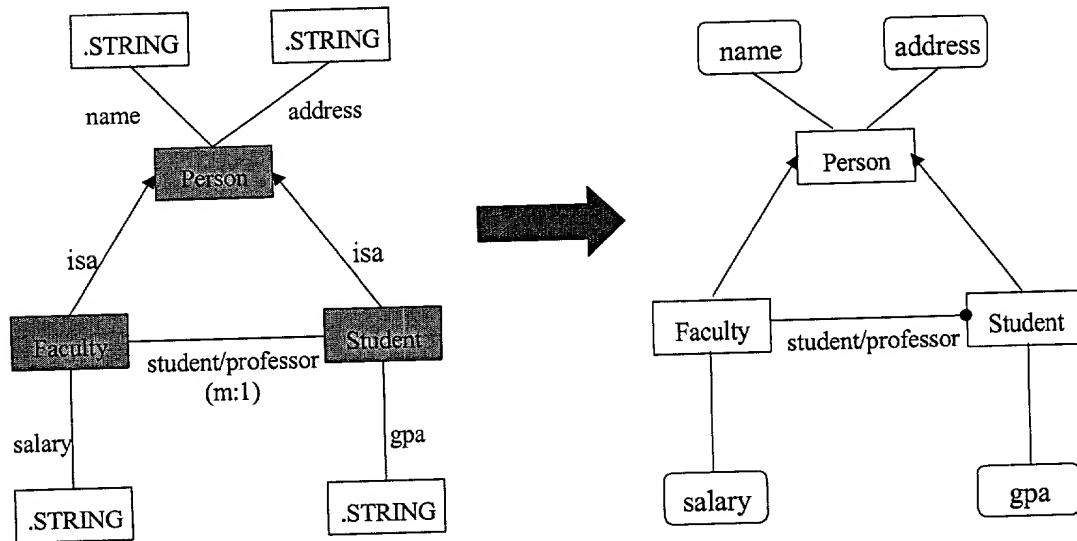


Fig. 14

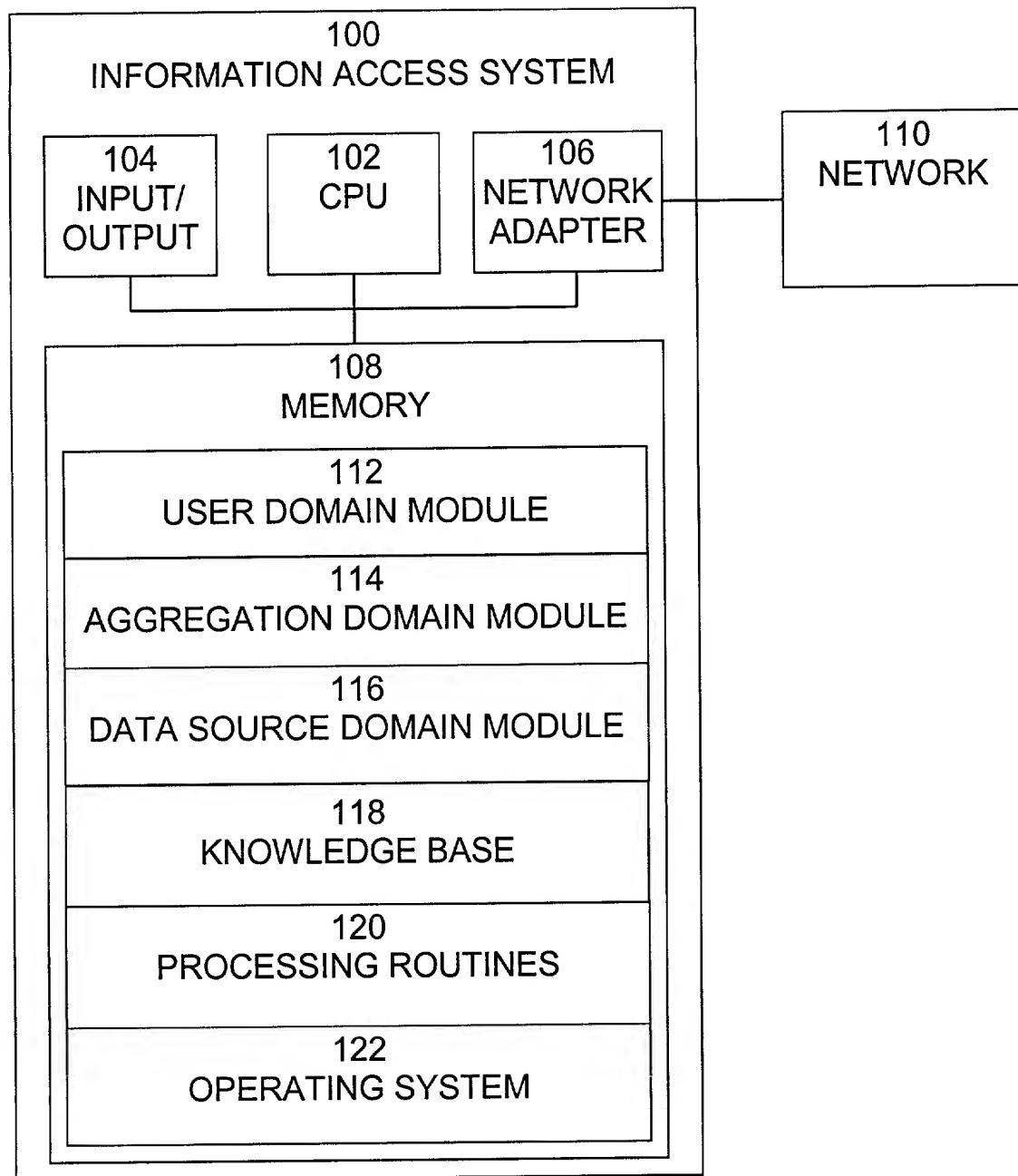


Fig. 15